

Definition

Constipation has been described in terms of both the character and frequency of stool. Normal bowel frequency ranges between three bowel movements per day to one movement every three days. However, a well-formed and otherwise normal stool that occurs once a week does not require therapy. A constipated stool is scyballous—that is, overdesiccated, hard, dry, and difficult to pass. Many symptoms are incorrectly associated with or attributed to constipation, such as headache, malaise, bad taste in the mouth, and coated tongue. There is no scientific basis that any of these is caused by constipation, but the concept has created a tremendous market for laxatives.

Fecal impaction refers to a huge accumulation of hard stool, usually in the rectum, that cannot be passed because of its size and consistency.

Megacolon is constipation carried to the extreme, with a hugely dilated and atonic colon, containing massive amounts of stool.

Technique

The patient who suffers from constipation will usually consult the physician for different reasons:

1. He or she has noticed a change in bowel habits.
2. He or she may request a new laxative, complaining that the one now being used is no longer effective.
3. Even though the patient has no complaints except for habitual infrequent bowel movements, he or she has been informed and even warned and frightened by other people or the media about this “abnormal and potentially dangerous habit.”
4. He or she complains of a set of symptoms attributed to constipation such as: a subjective sensation of incomplete emptying of the rectum; lower abdominal discomfort, malaise, anorexia, halitosis, coated tongue, abnormal distension, and flatulence.

The physician should clarify what the patient means by the term “constipation.” Ask the patient the following questions.

- Do you mean you don’t move your bowels as often as before?
- How did you move your bowels before when you were all right?
- How often do you move your bowels now?
- Do you mean your stools have become smaller? thinner? harder? dryer? more difficult to expel?
- Do you feel that there is stool remaining in your rectum?

If the patient does not complain of constipation spontaneously, the physician should ask simple questions such as:

- How often do you move your bowels?
- Have you noticed any change in your bowel habits?
- Have you noticed any change in the bulk of your stools?
- Do you feel that you have emptied your bowels entirely after you go to the toilet?

Basic Science

In contrast to the complex absorptive functions of the small bowel, the large bowel serves to create and store formed stool by absorbing water from the liquid ileal contents. The only absorptive function in addition to water is sodium and bicarbonate. Colonic function relative to constipation is due to disordered motility, either increased (spasm) or decreased (hypotonia). Peristalsis, as seen in the esophagus, gastric antrum, or small bowel, does not occur in the colon because of its unusual anatomy. Circular muscle is distributed unevenly, with areas of thick muscle (haustal folds) separated by a thin rudimentary muscle layer. The haustral folds become closer distally, ending at the rectosigmoid junction. The longitudinal muscle is bunched into the three strips (teniae) that contribute to nonperistaltic propulsive activity.

In contrast to the well-organized aboral peristaltic contractions of the esophagus, colonic motility occurs either by segmental contractions or by mass action. Segmental motility refers to the isolated contractions of individual haustra, creating a “bucket brigade” effect. When this functions abnormally with spasm, as seen in a spastic colon or spastic diverticular disease, pressure is built up in an isolated segment, creating constipation and pain, without any propulsive activity. Mass action refers to the contractions of a large portion of the colon, thrusting the contents forward by many haustral segments. It may be one of the causes of borborygmi.

Stool normally is stored in the sigmoid, not in the rectum, so the rectum usually is empty or contains only small amounts of stool. When the formed stool passes from the sigmoid into the rectum, it creates an afferent stimulus indicating the need to defecate. This stimulus may be suppressed unless the quantity of rectal contents becomes too great or the proximal pressure too high. The increased intrarectal pressure causes relaxation of the internal anal sphincter, composed of smooth muscle. When defecation occurs, the external anal sphincter also is relaxed voluntarily, whereas if defecation is suppressed, the external sphincter tone increases. During the act of defecation, the supporting structures of the rectum contract to create a vertical passage, augmented by increased pressure within the abdomen by the Valsalva maneuver and tensing the abdominal wall mus-

culature. In primitive societies, defecation routinely occurs in the squatting position, further enhancing the vertical axis of the rectum. The gastrointestinal tract is most active in the morning and following meals. A well-defined gastrocolic reflex occurs with gastric distention, causing the movement of stool from the sigmoid to the rectum. Thus, the best time to move the bowel is following breakfast.

Clinical Significance

The commonest causes of constipation are:

- Decreased stool weight or bulk, usually from a lack of dietary fiber. Certain fibers, such as bran or psyllium, are hygroscopic, increasing stool water content and weight.
- Decreased propulsive activity, usually from medication but occasionally from intrinsic muscle disease such as scleroderma, amyloid, and certain neurologic disorders. Medications include those with anticholinergic properties, such as the antidepressants and some antiarrhythmic drugs, the opiates, certain antacids, calcium channel blockers, and laxatives. The latter initially stimulate the musculature of the bowel through irritant properties, but with repeated use induce a hypotonia that responds only to more potent irritants, ultimately resulting in an atonic colon. Laxative "addiction" refers to a situation when defecation occurs only with the use of a laxative.
- Suppression of the normal defecatory rectal stimulus by voluntarily contracting the external anal sphincter because of inconvenience or painful anal disease, such as a thrombosed hemorrhoid or anal fissure.
- *Depression.* Along with a decrease in many bodily functions, such as anorexia and insomnia, the bowel function declines.
- *Decrease in physical activity.* Exercise stimulates colonic motility, so the saying "There is no such thing as a constipated runner" generally holds true. Conversely, sudden inactivity, such as an illness forcing bedrest, frequently leads to constipation.
- *Hypothyroidism.* Constipation rather than lack of energy may be the presenting symptom.

Constipation may be acute or chronic. An acute change in bowel habits, particularly over the age of 40, is a cause for concern because it may be a symptom of a colonic neoplasm. Appropriate diagnostic studies, including proctosigmoidoscopy or flexible sigmoidoscopy plus an air-contrast barium enema or colonoscopy, should be performed when a concern regarding neoplasm exists. Other acute causes are a sudden decrease in physical activity, change in diet, particularly reducing fiber, medications noted above, and anal pain.

Chronic constipation is more common and often more difficult to remedy. Once organic causes such as hypothyroidism are ruled out, chronic constipation often falls into two categories: the older patient with a well-established laxative habit and the younger patient, often female, who is constipated because of her lifestyle and often is headed toward laxative dependence. Sigmoid spasm often contributes to constipation by interfering with normal colonic motility so that colonic contents are held proximal to the sigmoid, resulting in overdesiccation or scybalous stools.

The documentation of colonic hypomotility is difficult.

Recently, the passage of radiopaque markers followed by serial radiographs has been utilized, but these markers probably are not handled in the same fashion as colonic contents.

Megacolon is an extreme example of constipation, where the colon musculature is hypotonic, allowing huge fecal accumulations. Congenital megacolon, or Hirschsprung's disease, is due to an aganglionic segment of the colon destroying the normal neurologic defecatory reflex. Acquired megacolon is due to factors such as psychosis or senility. A simple but effective method of differentiating congenital from acquired megacolon is the rectal examination. In congenital megacolon, the rectum is empty despite huge accumulations of stool proximally; in psychogenic megacolon, the rectum is full of stool. The latter often is associated with constant fecal soiling and encopresis (spontaneous defecation at night). Additional, more sophisticated diagnostic studies include biopsy for ganglion cells and rectosphincteric manometry.

Once readily diagnosable conditions (e.g., neoplasm, medication, hypothyroidism) have been excluded, functional and dietary factors must be considered. A common example of chronic constipation is the young woman who performs an extra half hour of sleep in the morning to eating breakfast and attempting to defecate spontaneously. Indeed, the normal urge to defecate in the morning may be suppressed as a matter of convenience. Her diet is either "junk food" or salad, both surprisingly low in fiber. In contrast to popular opinion, lettuce and similar vegetables are quite low in fiber content (see Table 89.1), so large amounts of salads would be necessary to supply the same fiber content as an ounce or two of All-Bran cereal. She begins to take laxatives as a matter of expediency, rapidly leading to dependency. The cycle can be broken in several places: by eating a breakfast containing one of the bran cereals, taking time to defecate after breakfast, encouraging increased physical activity, and stopping the laxatives. Enemas and suppositories are lesser evils because they stimulate only the rectosigmoid or rectum, respectively, rather than the entire colon, so that these can be used to retrain the bowel.

Fiber therapy has become appropriately popular among patients and physicians because it creates a physiologic stimulus by increasing stool bulk and thereby increasing colonic contractions. Psyllium products and methylcellulose are artificial forms of bran, being similarly hygroscopic.

Lactulose is a disaccharide that is not digested in the intestine, so it enters the colon intact, where it is broken down to one and two carbon fragments by bacterial digestion, creating an osmotic load, similar to the situation that

Table 89.1
Quantity of Various Foods Needed to Supply 10 Grams of Dietary Fiber

Food	Ounces
Cereals	
Bran	1.1
Shredded wheat	2.9
Grape Nuts	3.2
Vegetables	
Green beans	14.7
Broccoli, cooked	16.5
Carrots, cooked	16.8
Lettuce	22.0

occurs when milk is ingested by a lactose-deficient individual. Lactulose may be useful in stimulating colonic emptying, although patients frequently complain about excess gas. Other than lactulose, there is no nonlaxative colonic stimulant. Metoclopramide stimulates peristalsis in the esophagus, stomach, and small bowel, but not in the colon.

Some surgeons have proposed surgical procedures to correct constipation, ranging from subtotal colectomy to segmental resections. A theory of inappropriate relaxation of the anal musculature has prompted some to recommend anal myectomies. Although in isolated situations this approach might be useful, in many patients where this has been tried, only temporary relief occurs.

References

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